

PEO / SYSCOM Commander's Conference

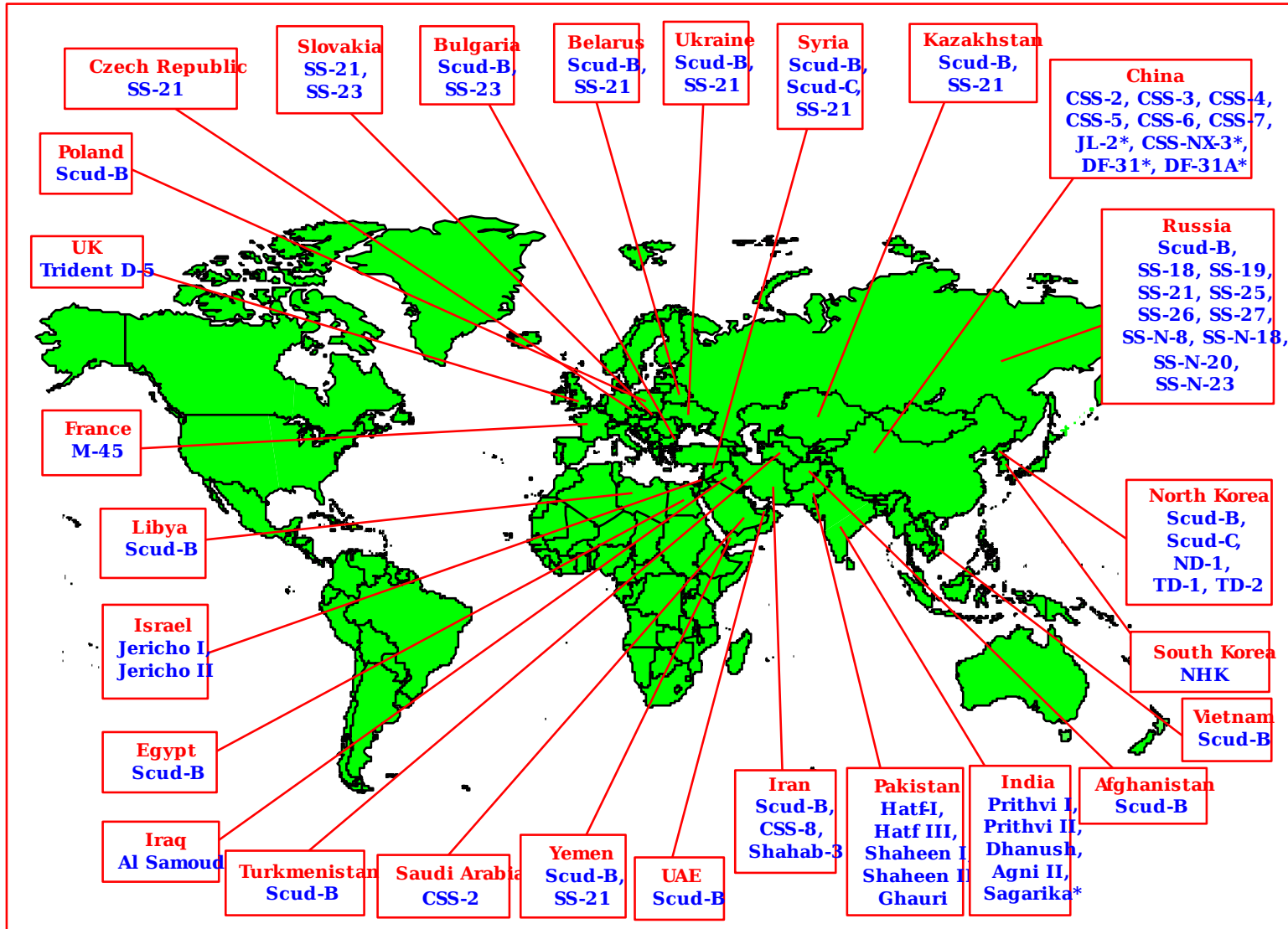


20-22 NOV 02

**Mr. Rob Brown
Assistant Deputy For Program Integration
Missile Defense Agency**



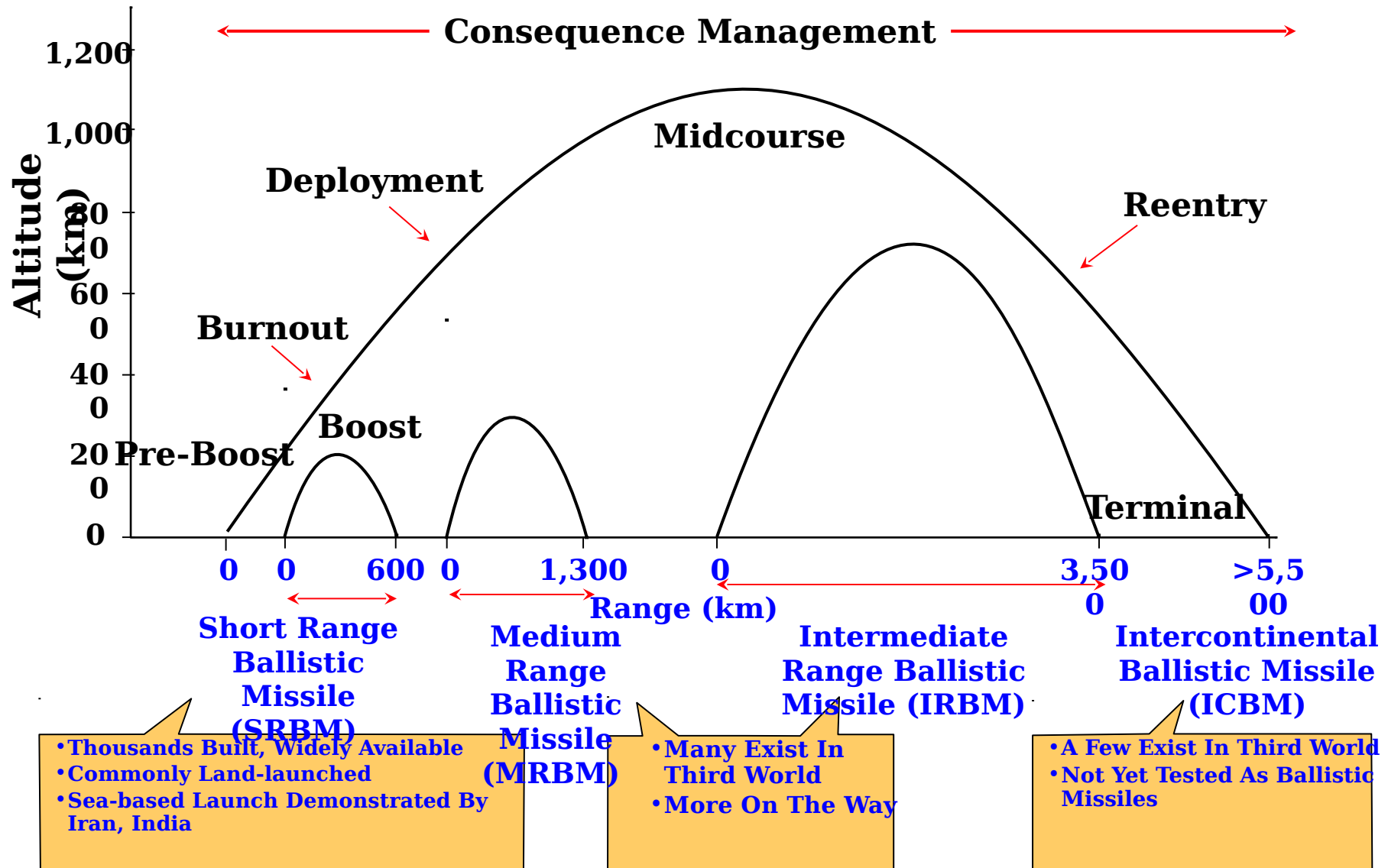
BALLISTIC MISSILE CAPABILITY - 2002



* Missiles In Development



BALLISTIC MISSILE DEFENSE CHALLENGE





THREAT TRENDS



600 km



1,300 km



2,000 km



6,000 km

+ Third Stage



BMD SYSTEM

- Multiple Engagement Opportunities Increase Likelihood Of Success
- Complicates Efforts Of Adversaries
- Overcomes Countermeasures

Midcourse Defense Segment

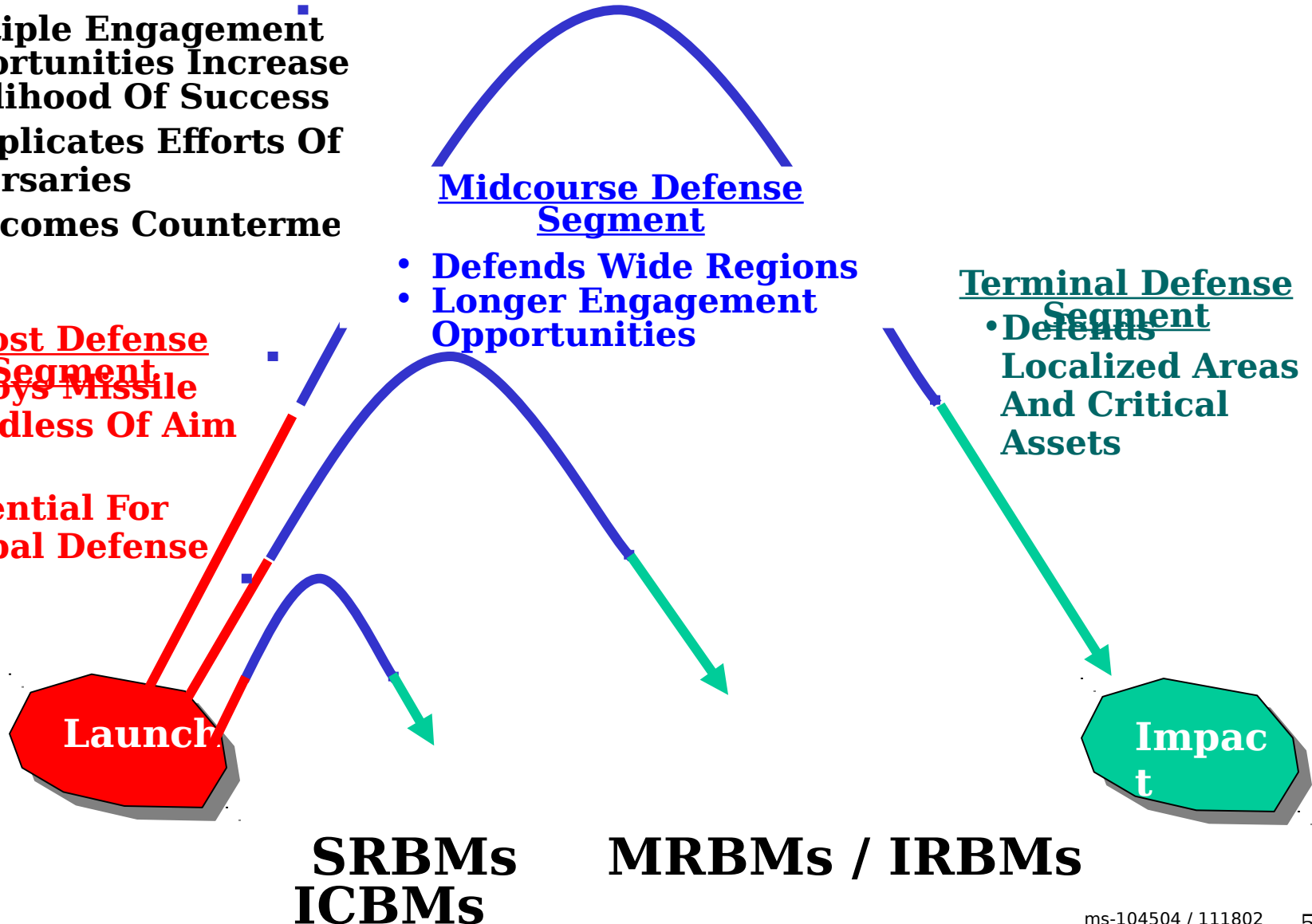
- Defends Wide Regions
- Longer Engagement Opportunities

Terminal Defense Segment

- Defends Localized Areas And Critical Assets

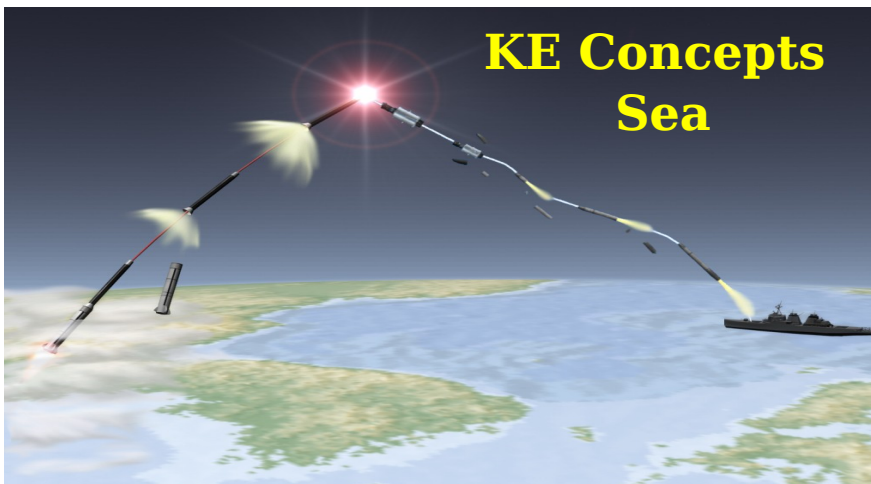
Boost Defense Segment

- Destroys Missile Regardless Of Aim Point
- Potential For Global Defense





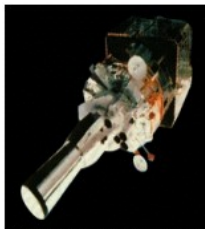
BOOST PHASE DEFENSE





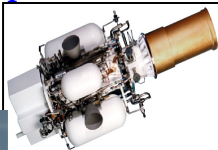
MIDCOURSE SEGMENT ELEMENTS

Ground-Based



Space Based
Infrared
System / Low
Component

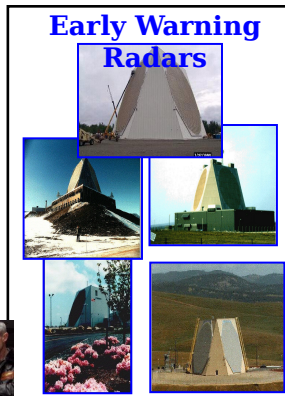
Defense Support Program/
Space Based Infrared System
High Component



Kill
Vehicle



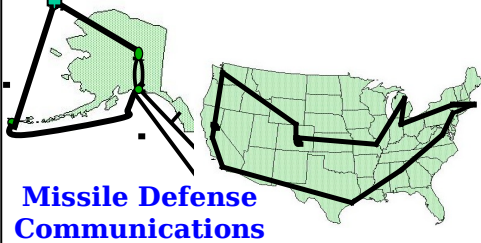
Battle
Management /
Command
Control



Early Warning
Radars



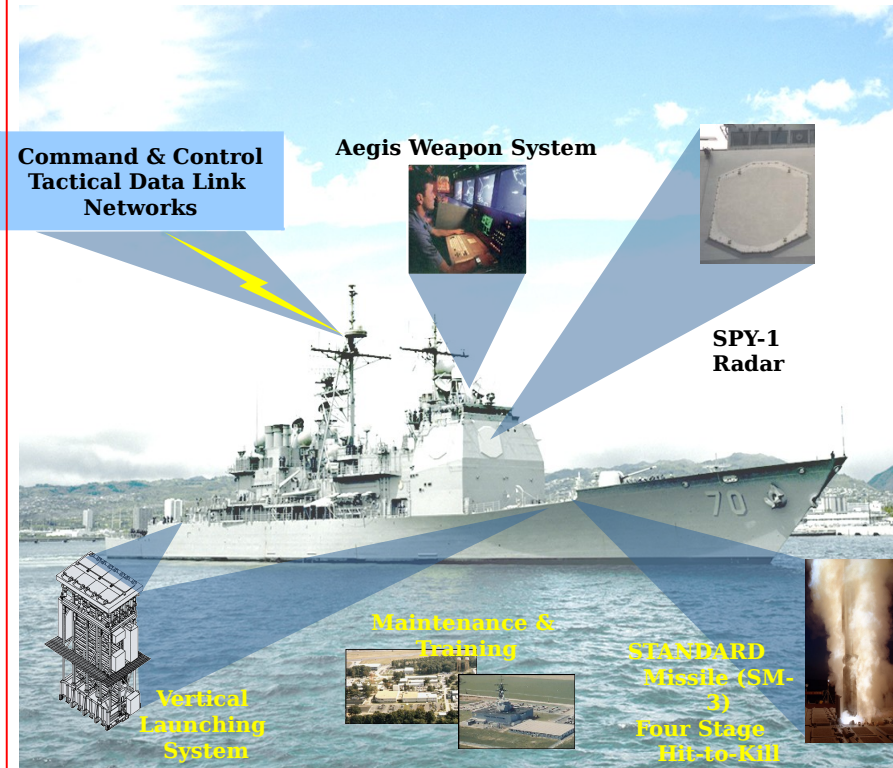
X-band Radar



Missile Defense
Communications
Net

Interceptor

Sea-Based





TERMINAL DEFENSE



PATRIOT PAC-3



THAAD



Arrow



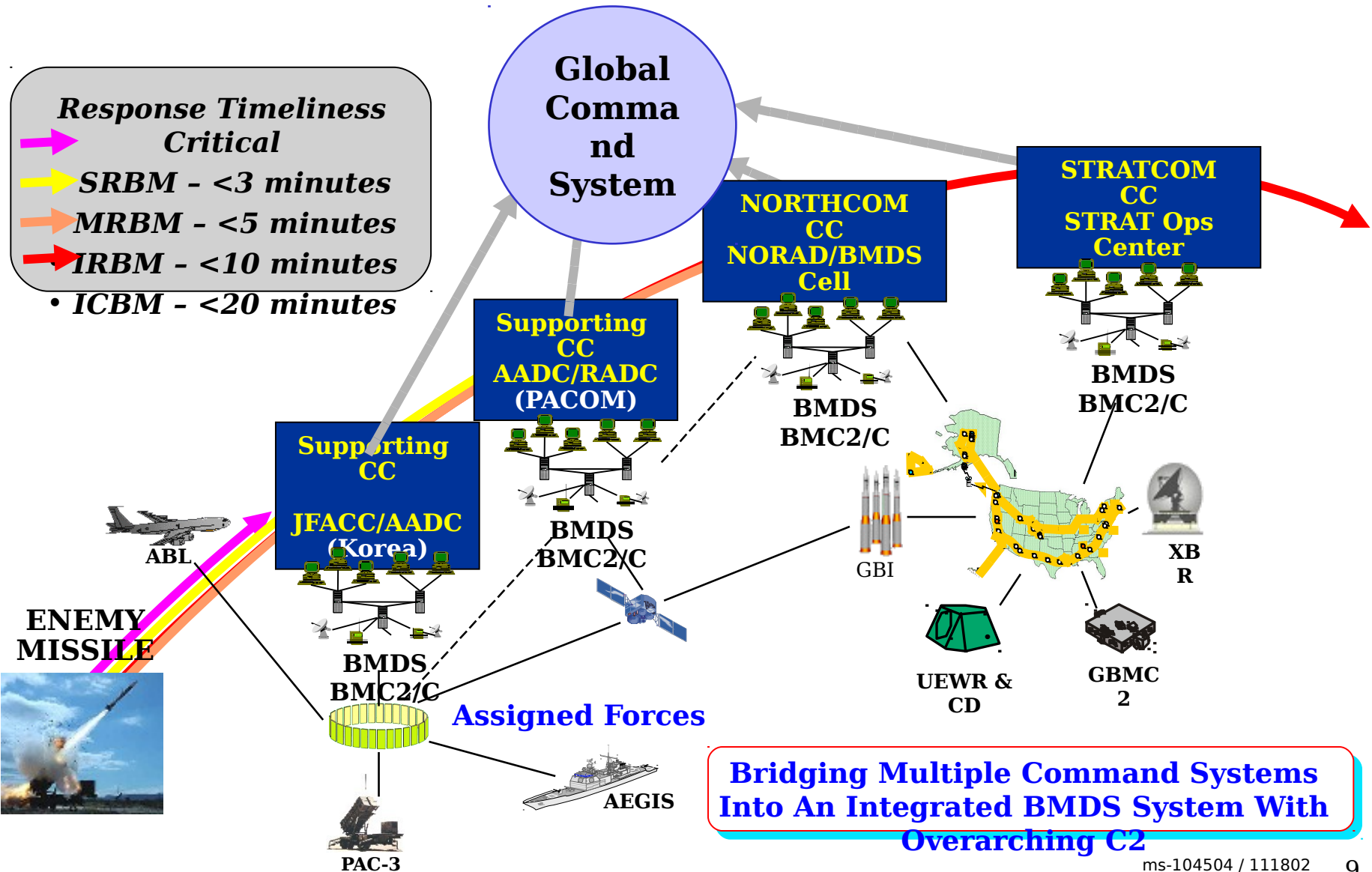
Sea-Based Terminal Concept



**Medium Extended Air
Defense System
(MEADS)**



INTEGRATED BMDS ENVIRONMENT





THE PROBLEM

- **Developing Missile Defenses Takes Time (10+ Years For The PAC-3) And Requirements Can Become Outmoded**
- **Must Expect To Be Surprised By Changes In Threat**
- ***Cannot* Know With Confidence What Nation, Combination Of Nations, Or Non-state Actors Will Pose Threats To Vital U.S. Interests Or Those Of U.S. Allies And Friends**
- ***Can* Anticipate Capabilities An Adversary Might Employ To Coerce Neighbors, Deter The U.S. From Acting, Or Directly Attack The U.S. Or Its Deployed Forces**



PROGRAM STATUS

As Of March 2001


Documents

	APB	TEMP	SAMP	ORD
PAC-3	MAR 00 - Cost And Schedule Breach	SEP 00 - New TEMP In Coordination	APR 97 - Acquisition Strategy	MAY 98
Navy Area	OCT 99 - Cost And Schedule Breach	JAN 97 - Rev 2 Draft Now In Development	FEB 97 - Need To Revise Exist Criteria	APR 98
THAAD	JUN 00	JUN 00	JUN 00	JUN 00
NTW	1999	1999 - ALI Only	1999 - Based Upon 99 Block I FUE - FY 07	1999
NMD	MAR 00 - Pending ADM Current Program	JUN 99	MAY 00	MAY 00
ABL	MAY 99 - Cost And Schedule Breach	NOV 96 - New Revisions In Process	NOV 96 - New Revisions In Coordination	DEC 99
SBIRS-Low	AUG 99 - Update Cost Estimates And Approve	JUN 98 - Does Not Reflect Acceleration	OCT 96 - To Be Updated After Next DAES Review	APR 96
	Breach	Out Of Date	Current	



MISSILE DEFENSE PROGRAM DIRECTION

2 January 2002 SecDef Memo

 SECRETARY OF DEFENSE
1000 DEFENSE PENTAGON
WASHINGTON, DC 20301-1000

JAN 2 2002


MEMORANDUM FOR DEPUTY SECRETARY OF DEFENSE
SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
ASSISTANT SECRETARIES OF DEFENSE
GENERAL COUNSEL OF THE DEPARTMENT OF
DEFENSE
DIRECTOR OPERATIONAL TEST AND
EVALUATION
COMMANDERS OF THE COMBATANT
COMMANDS
ASSISTANTS TO THE SECRETARY OF DEFENSE
DIRECTOR, ADMINISTRATION & MANAGEMENT
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: Missile Defense Program Direction

The Department last year conducted extensive and rigorous missile defense reviews to determine how best to fulfill the Nation's need to defend the U.S., deployed forces, allies and friends. The findings underscore the importance of layered defenses as well as the need for new approaches to acquire and deploy missile defenses.

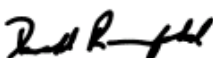
The attached provides my key priorities and specific direction to execute the Missile Defense Program. My objectives are:

1. Establish a single program to develop an integrated system under a newly titled Missile Defense Agency (MDA).
2. Assign the best and brightest people to this work.
3. Apply a capability-based requirements process for missile defense.
4. Direct the MDA to develop the missile defense system and baseline the capability and configuration of its elements and the Military Departments to procure and provide for operation and support.

 U18606 /01

The full and cooperative efforts of the Services, Joint Staff, and defense agencies are essential to this goal. I ask that you give your full support to this national priority. I will look to the Senior Executive Council for oversight and recommendations for decision-making in this area.

Point of contact for this matter is Lieutenant General Ronald Kadish, Director, Missile Defense Agency, (703) 695-6550.



Attachment:
As stated

- Employ A Ballistic Missile Defense System That **Layers Defenses** To Intercept Missiles In All Phases Of Their Flight Against All Ranges Of Threat
- Establish A **Single Program To Develop An Integrated System** Under A Newly Titled Missile Defense Agency (MDA)
- **MDA To Develop The Missile Defense System. Military Departments To Procure And Provide For Operation And Support**
- **Current Missile Defense ORDS Are Hereby Cancelled - Apply A Capability-based Requirements Process For Missile Defense**
- **Assign The Best And Brightest People**

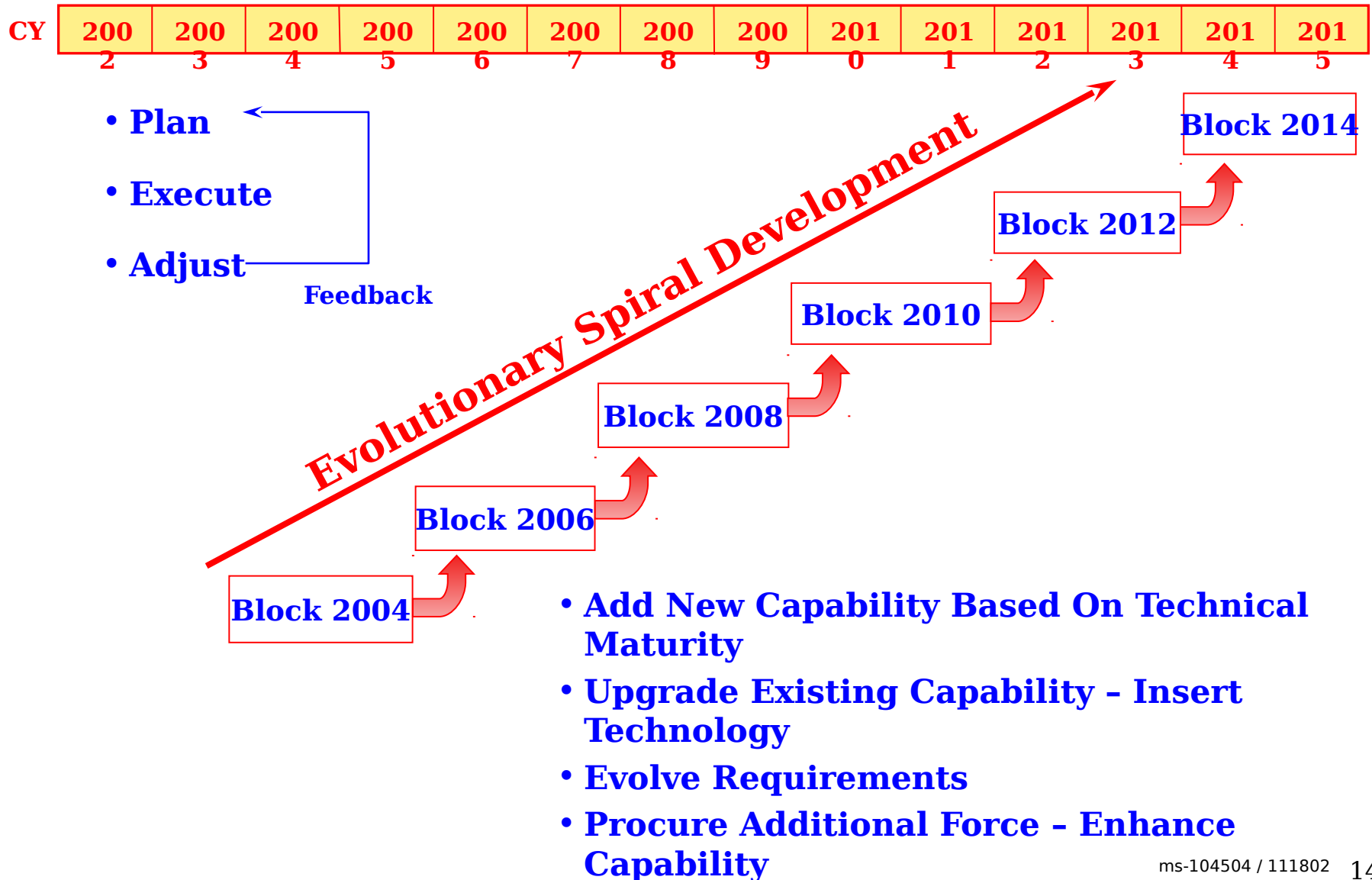


CAPABILITY BASED PLANNING (CBP)

- **Planning, Under Uncertainty, To Provide Capabilities Suitable For A Wide Range Of Modern-Day Challenges And Circumstances While Working Within An Economic Framework That Necessitates Choice**
- **Key Elements**
 - **Understanding Needs**
 - **Assessing Options At Mission Or Operational Level**
 - **Choosing Capability Levels And Options In An Integrative Framework That Considers Other Factors, Types Of Risk, And Economic Limitations**
 - **A Solution Framework That Emphasizes “Building Blocks”**

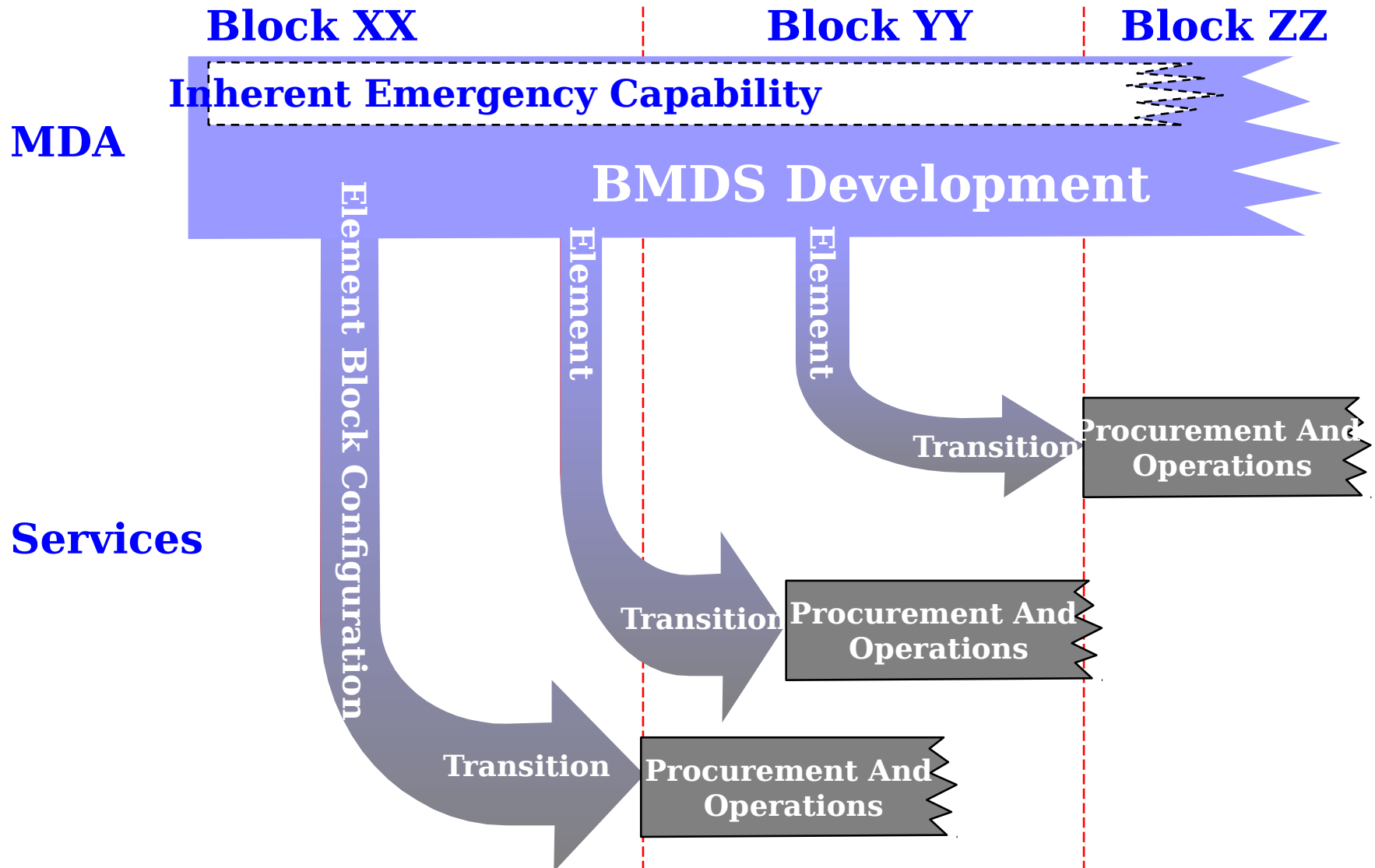


BMD EVOLUTIONARY DEVELOPMENT





BMDS BLOCK APPROACH





MISSILE DEFENSE RELATIONSHIPS

- Service BoD
- Liaison Office
 - Multi-mission
 - Interface Mgmt

MDA

- Joint Warfighter Support
 - Exercise Support
 - Contingency
 - Planning

Services

**Combatant
Commanders**

- JTAMDO
 - CRD-ORD
 - Integration
 - Joint CONOPS
 - Ops Concept Team

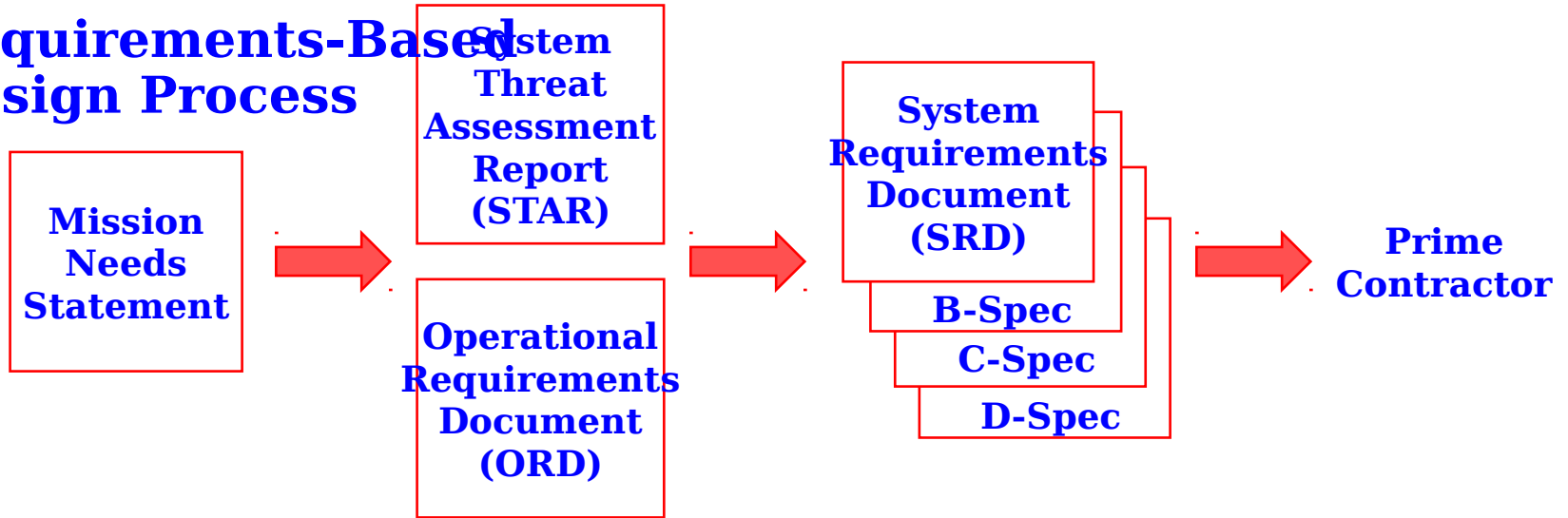
**Moving From Traditional Roles /
Responsibilities**

To A Collaborative Team Approach

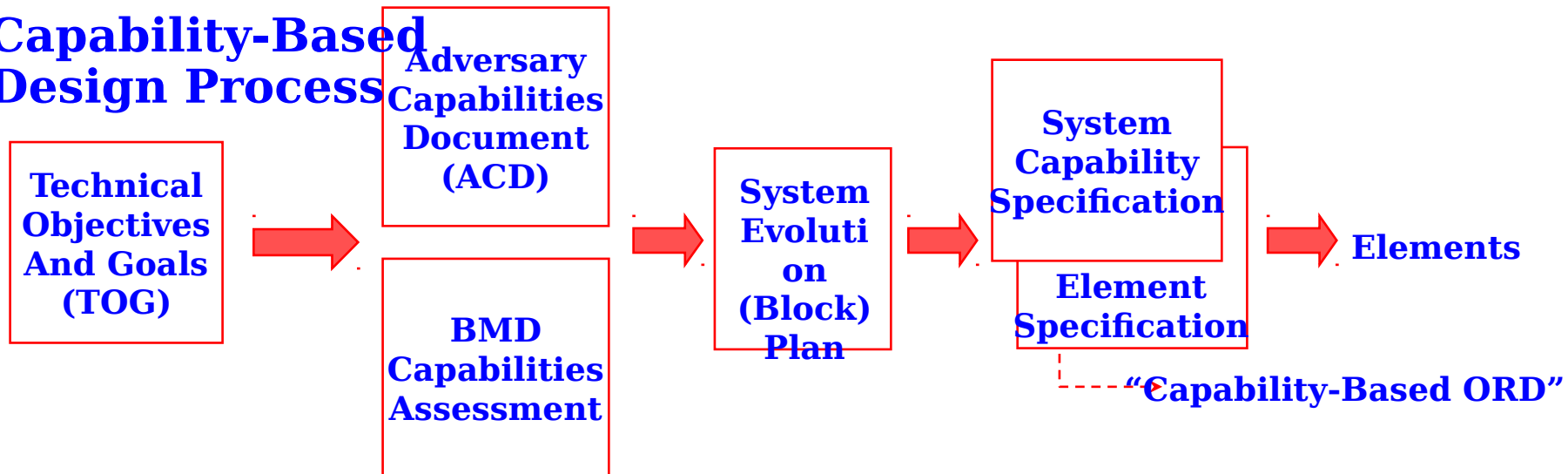


REQUIREMENTS-BASED VERSUS CAPABILITY-BASED

Requirements-Based Design Process



Capability-Based Design Process





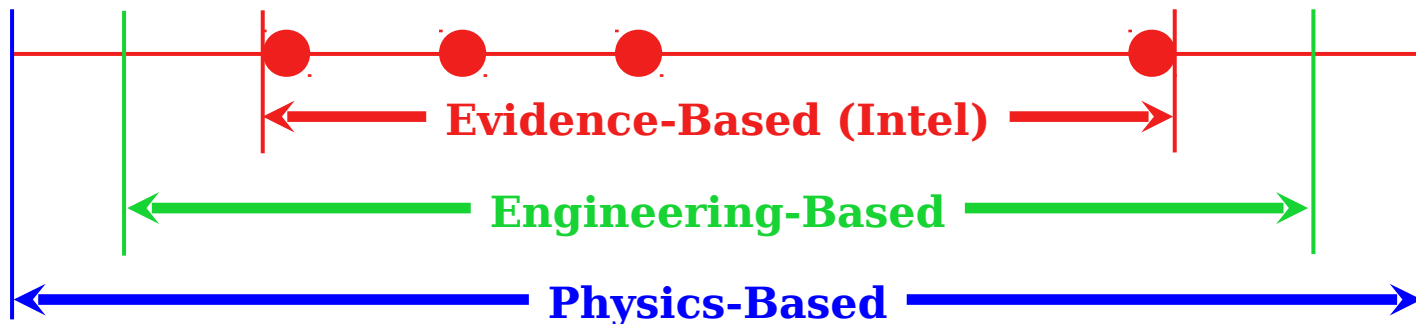
TECHNICAL OBJECTIVES AND GOALS (TOG) FRAMEWORK

SecDef Program Direction		
BMDS Technical / Operational Objectives		
Technical Goals	Technical Metrics	
Quality	<ul style="list-style-type: none"> • Hardware / Software • Readiness Levels (Technical / Integration / Engineering and Manufacturing) 	
Schedule		• Date Available
Effective	<ul style="list-style-type: none"> • Probability Of Engagement Success (P_{ES}) 	• Launch Area Denied
Affordable	<ul style="list-style-type: none"> • Unit Life Cycle Cost 	• Budget Effectiveness
Robust	<ul style="list-style-type: none"> • Survivability 	<ul style="list-style-type: none"> • Cost Effectiveness • Robustness To Threat
Limit A Priori Knowledge		• Does / Does Not Rely On A Priori Knowledge
Flexible	• Adaptable	• Evolvable • Growable
Compatible	<ul style="list-style-type: none"> • Exchange Information • Utilize Information 	
Demonstrable		<ul style="list-style-type: none"> • Test Realism • Measurable Test Results
Operational Goals	Operational Metrics	
Evolution Of CONOPS	<ul style="list-style-type: none"> • Planning, Execution And Coordination 	<ul style="list-style-type: none"> • Human Factors Design • Human Impact On Timeline • Supportability



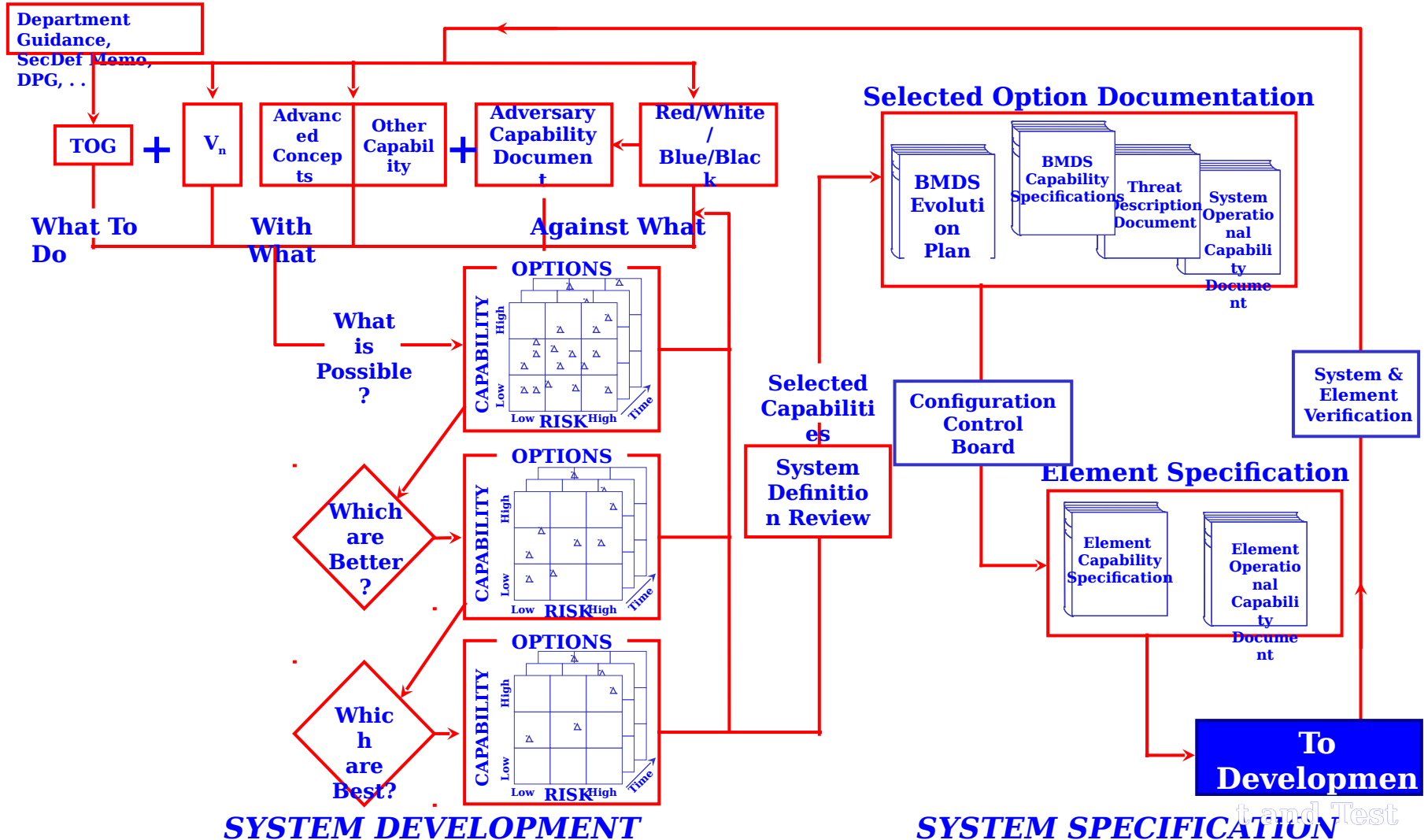
THREAT APPROACH

- **Review Available Evidence-Based Parameter Bounds**
 - Ballistic Missile Reference Document, Strategic Ballistic Missile Reference Document, System Threat Assessments, Other Intel Documents
 - Set Intel-Based Parameter Bounds
- **Consider Design Space Variations**
 - Review Engineering Technologies And What Is Technically Feasible To Set The Engineering Bounds
- **Determine Bounds Based On Physics**





CAPABILITY-BASED SPECIFICATION DEVELOPMENT





THE PATHS OF WARFIGHTER INPUT

TOG Efforts

What

How

Who

• Desired Capabilities

- C2/BM/C Military Utility Assessment (MUA)
- BMDS MUA

- C2/BM/C-X
- MUA WIPT/JTAMD Process

- JNIC
- JTAMDO, MDA, JFCOM, Services

Service Liaison Teams And Boards Of Directors

• Operational Approaches

- Element EOCs
- IMD CONOPS
- Operational Concepts, Architectures, And Requirements
- OPS Construct
- Employment Concepts
- C2/BM/C Employment Concepts

- Block Activation Plan (BAP)
- JTAMD Process
- OAR WIPT/JTAMD Process
- MDNTB
- Prototyping IPT
- C2/BM/C-X

- Operations Concept Team (OCT)
- JTAMDO, MDA, JFCOM, Service
- JTAMDO, MDA, JFCOM, Services
- OCT
- MDNTB
- JNIC

• Suitability And Supportability

- Product Support Annex
- DOTMLPF

- Block Activation Plan (BAP)
- DOTMLPF WIPT/JTAMD Process

- Product Support Team (PST)
- JTAMDO, MDA, JFCOM, Services

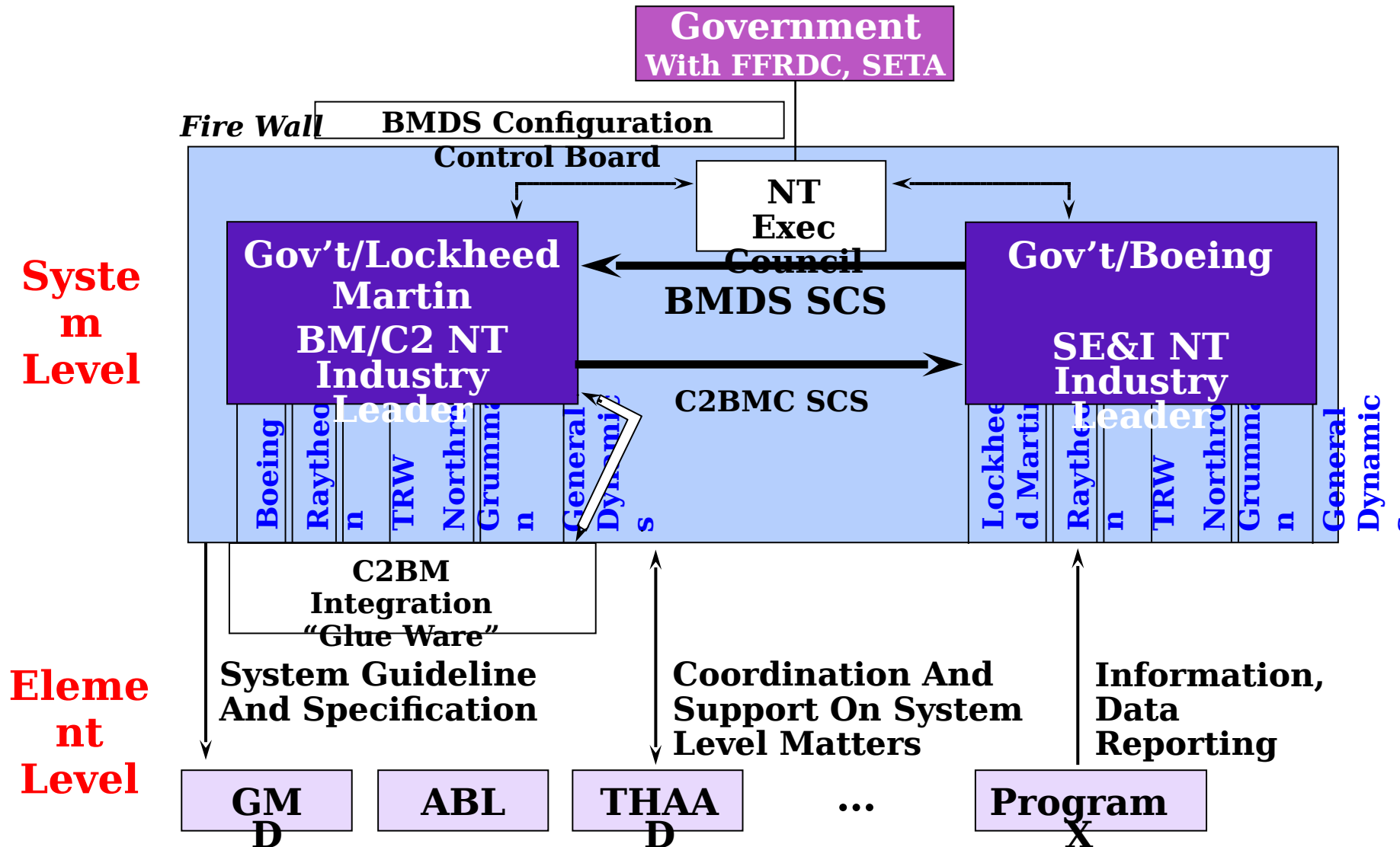
Service Liaison Teams And Boards Of Directors

• Production Quantities And Force Levels

Years, Table Tops, Experiments, Exercises, Wargames



NATIONAL TEAM





BLOCK INTEGRATED MASTER PLAN EVENTS

Event 0 - Block Capability Alternatives

Event 1 - Preliminary Configuration Definition

Event 2 - Configuration Definition

**Event 3 - Element / Component Verification
Initiation
(Prototype Development)**

Event 4 - Integrated Test Readiness Review

Event 5 - Interim Test And Progress Review

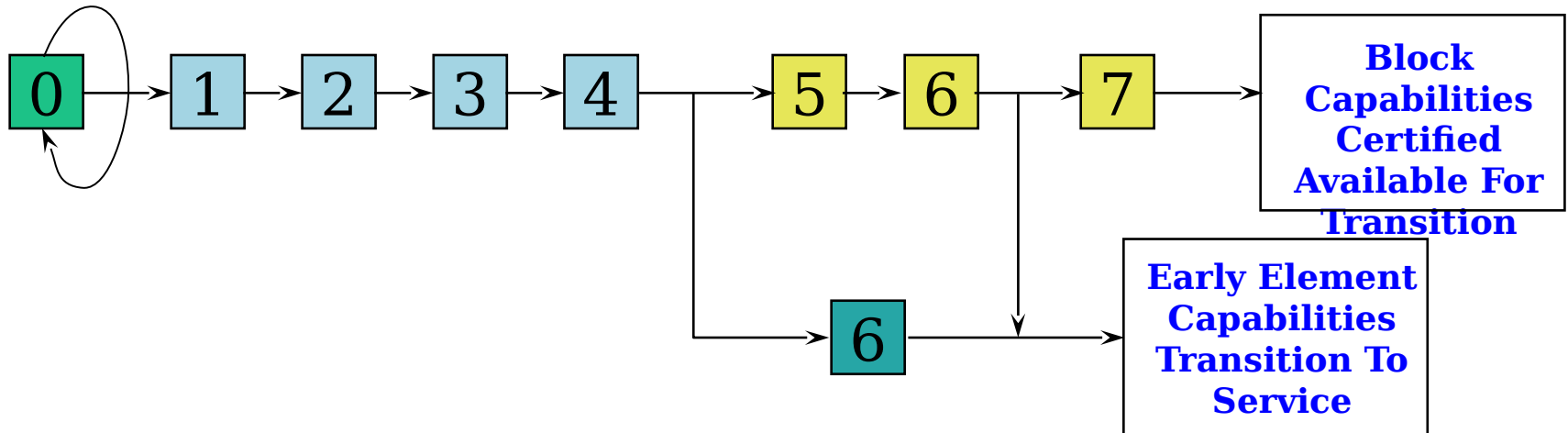
**Event 6 - Element / Component Transition Decision
Point(s)**

Event 7 - Block Certification Of Military Utility

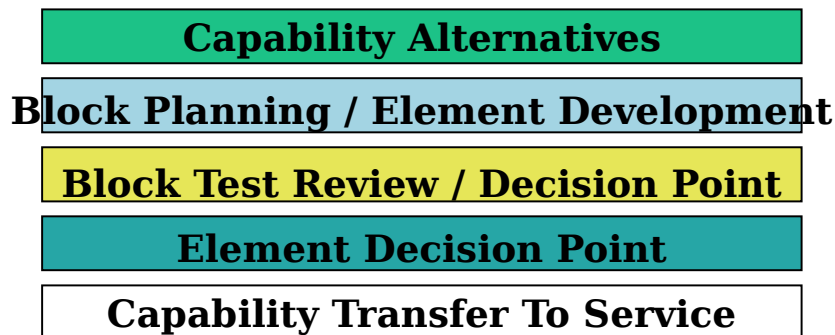


ELEMENT AND BLOCK TRANSFER

Block Transfer Path



Element Transfer Path





BLOCK INTEGRATED MASTER PLAN

(EO)ⁿ - Block Capability Alternatives

- Block Planning Process Completed
- Long Lead Targets, Tests And Exercises Identified
- Affordability Analysis Completed
- Preliminary Block Plan Approved

E1 - Preliminary Configuration Definition

- Preliminary Block Description Approved
- Technology Readiness Levels Assessed
- Performance Assessments Updated
- Risks Assessed And Mitigation Programs Established
- Detailed Cost Estimates For Elements / Components Available
- Cost / Benefit Analysis Updated
- Integration / Test Objectives Defined
- Element / Component PDRs Completed
- Required Funding Identified
- IMS Created

E2 - Configuration Definition

- CDRs Complete For All Element / Component / Targets Programs
- Performance / Cost Estimates Updated
- Risks Assessed And Mitigation Programs Updated
- Military Utility Characterized And CONOPS Refined
- Preliminary Integration Test Plan Available
- Funding Available And Resources Allocated
- Block Definition Updated
- IMS Updated

E3 - First Development Article

- First Development Article Built And Initial Tests Completed
- Targets Built And Tests Completed
- Test Range And Support Planning Completed
- CONOPS Defined And OPS Architecture Available
- Funding And EAC Assessed

E4 - Integrated Test Readiness Review

- Block Integration And Test Planning Completed
- Element / Component Test And Checkout Completed
- Target Test And Checkout Completed
- BMDS Tactics, Techniques And Procedures For Designated U
- Funding Updated And EAC Updated
- Operational Characterization Of Element Completed
- Operational Certification Of Element Completed

E5 - Interim Test And Progress Review

- 50% Of System Test Objectives Accomplished
- Support System Defined
- Training System Defined
- Funding Updated And EAC Verified
- Initial Transition Plans Completed
- Initial Operational Characterization Completed

E6 - Element / Component Transition Decision Point

- System / Element / Component Testing Completed
- Operational Characterization Completed
- Support Systems Planned And Budgeted
- Training Systems Planned And Budgeted
- Transition Plans Completed And Funded
- Production Plans Available
- Updated Block Definition Available
- Element / Component Certification Of Military Utility Compl
- Service TOA Available

E7 - Block Configuration Of Military Utility

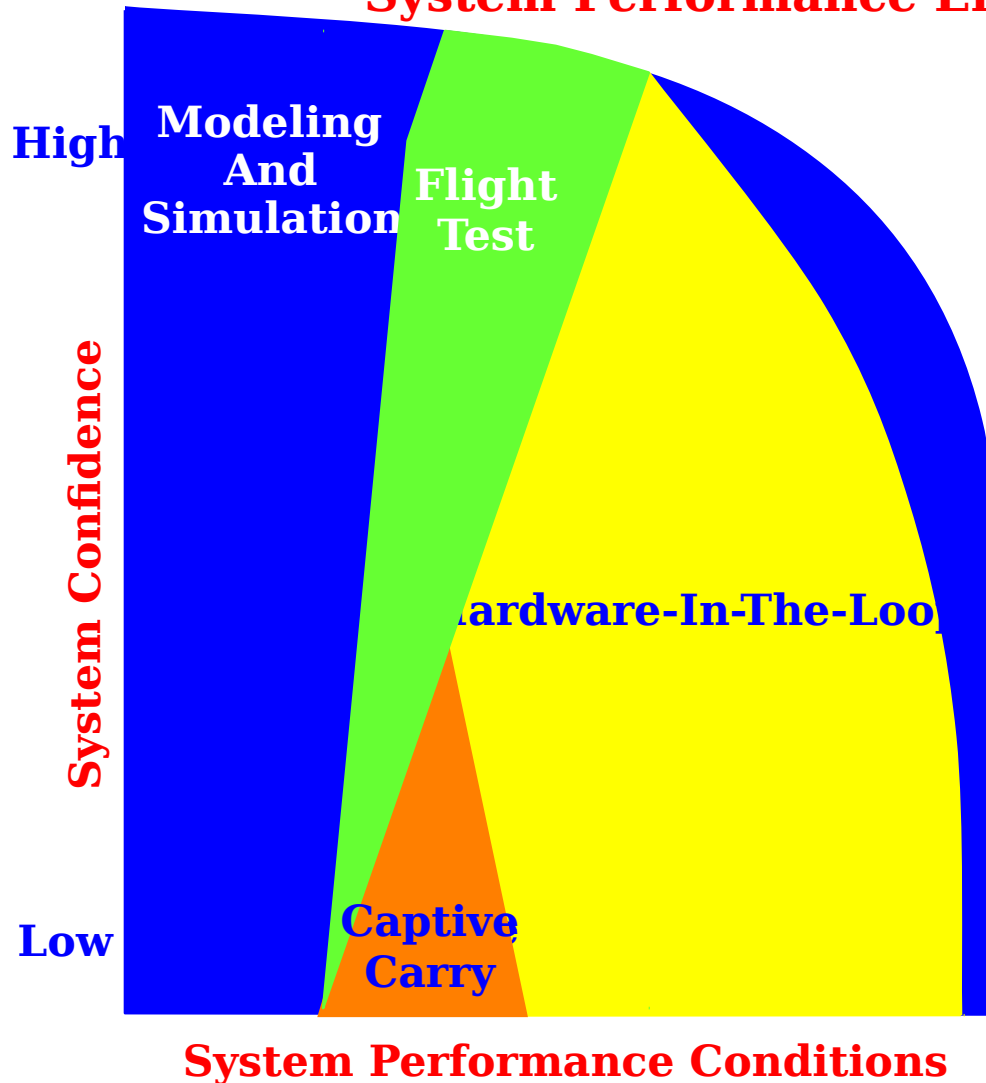
- Military Utility Assessed And System / Element / Component Offered For Transition
- BMDS Capability Demonstrated
- LCC Estimate Indicates Long Term Affordability
- RM&A And Support Requirements Characterized
- Block Certification Of Military Utility Completed
- Integration Of Declared Block Capability Into BMDS

**Tailored To Individual Block
Composition**



BUILDING CONFIDENCE BASED ON AN INTEGRATED APPROACH

System Performance Envelope

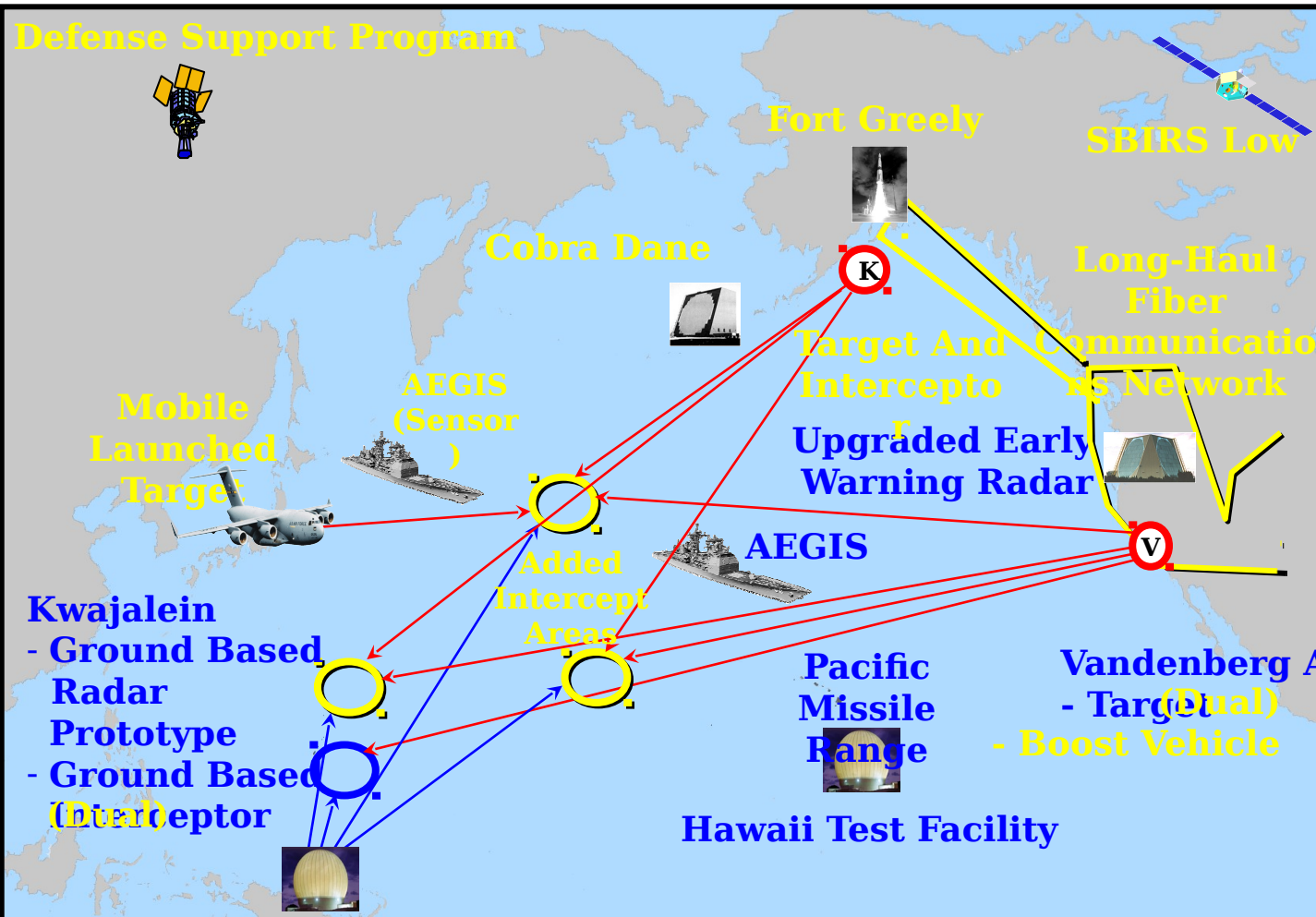


- **Flight And Ground Testing Only Address A Limited Portion Of The Operational Envelope**
- **Test Affordability Must Be Considered**
- **An Integrated, Comprehensive Simulation Program Improves Confidence That The System Will Meet Performance Requirements**



BMD SYSTEM TEST BED

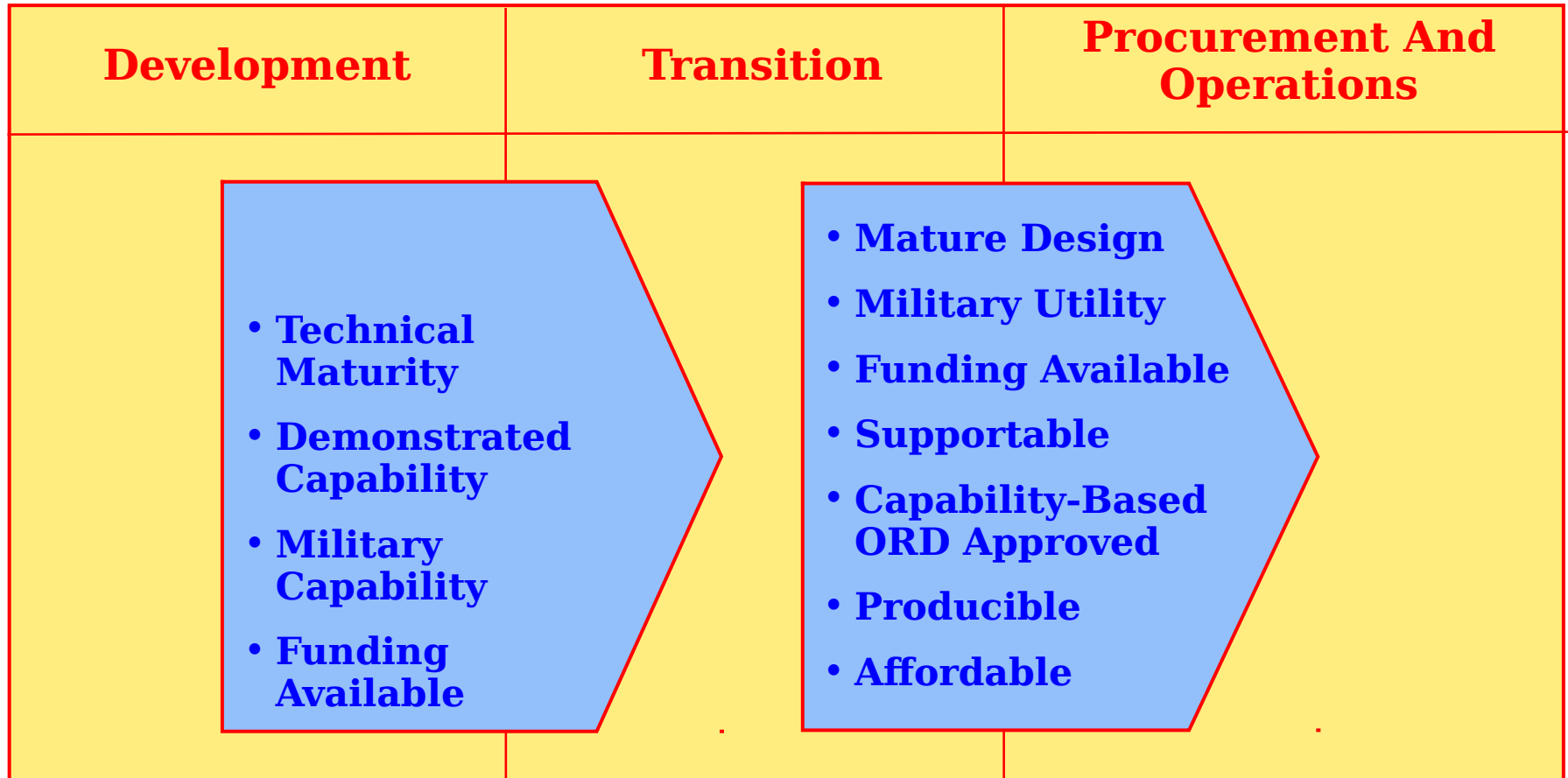
Defense Support Program



- Common Test Bed For Ground-And Sea-Based Elements
- Expandable To Boost And Terminal Segments
- Adds Realism To Test
- Allows Multiple Engagements
- Adds Additional Intercept Areas
- Enhances Ground Test Capability
- Adds SBIRS High And Low Testing

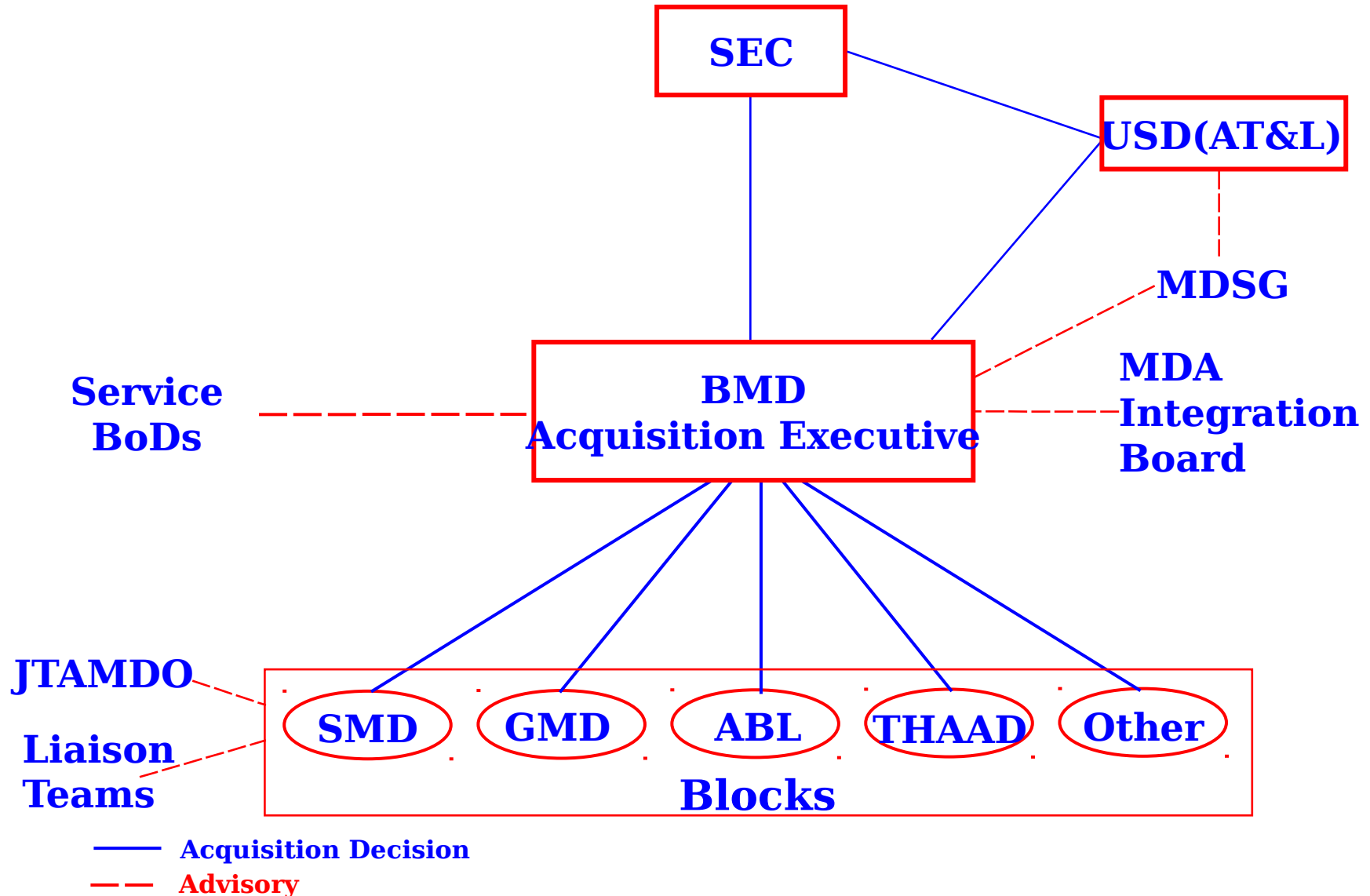


CRITERIA FOR TRANSITION



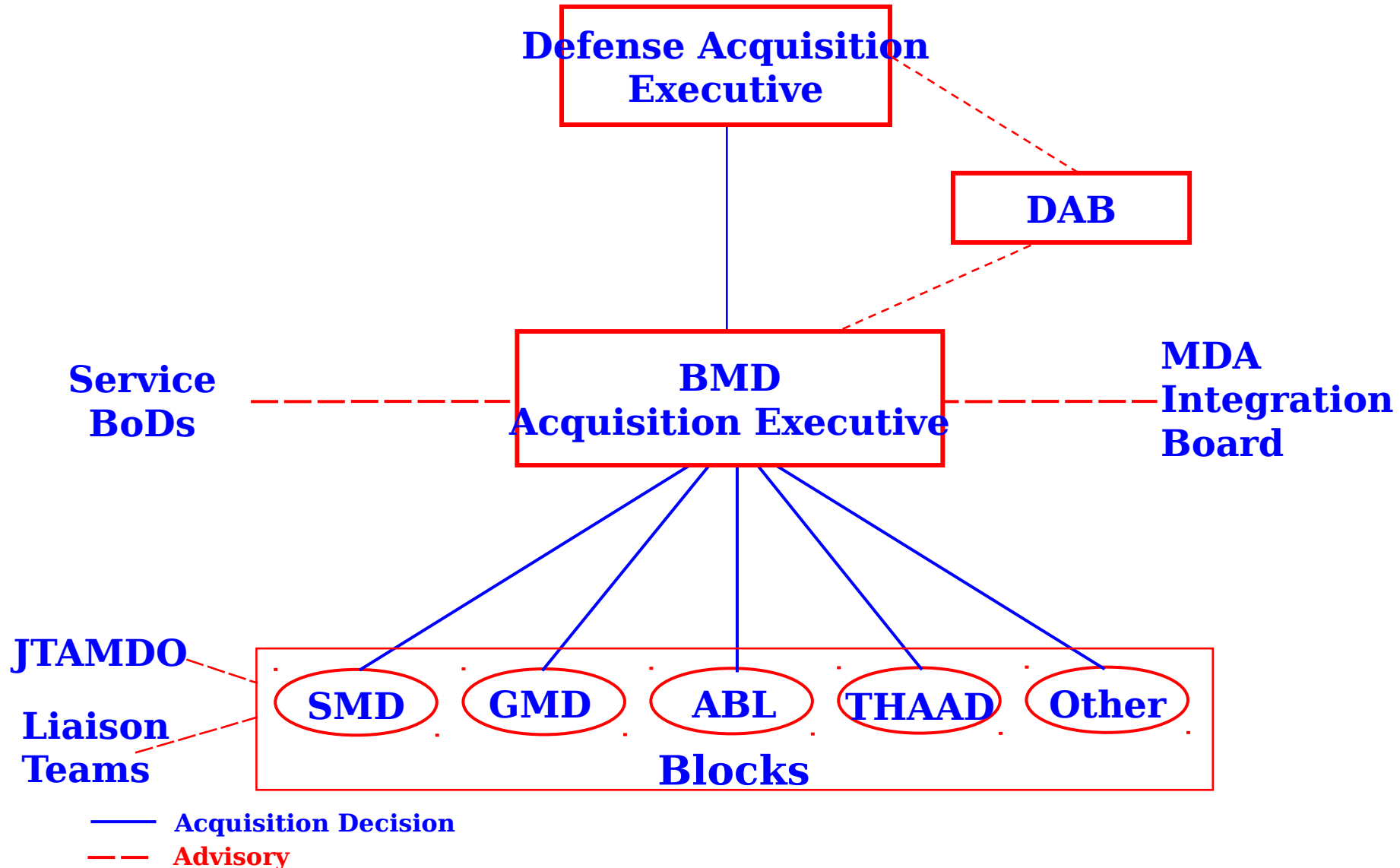


BMDs ACQUISITION DECISIONS RDT&E





BMDs ACQUISITION DECISIONS PROCUREMENT AND OPERATIONS





MISSILE DEFENSE SUPPORT GROUP

- **Provides Streamlined Executive Review And Oversight**
- **Facilitates Rapid Decision-Making**
- **Advises Director, MDA And Supports SEC Decision-Making**
 - Full Range Of Viewpoints
- **Engages Key Service And Department Personnel With MDA Management**
- **Provides A Flexible Approach To Execute Capability-Based Acquisition**

MDSG

Members

- **USD(AT&L)**
 - Chair
- **MDA**
- **Services**
- **USD(P)**
- **USD(C)**
- **Joint Staff**
- **ASD(C3I)**
- **DoD(GC)**
- **D, OT&E**
- **D, PA&E**
- **C, CAIG**



MYTHS VERSUS REALITY

Myth

- **BMDS Is Not Based On Threats**
- **MDA Is Exempt From DoD 5000**
- **MDA Has Minimal Oversight**
- **Capability-Based Does Not Involve The Warfighter**
- **BMDS Does Not Have A Requirements Process**

Reality

- **BMDS Is Structured Around Greater Threat Definitions**
 - **Expands Observed Threats With What Is Possible**
 - **Enables Flexible BMDS Design To Match Capability**
- **MDA Tailored DoD 5000 With New Phases, New Reporting, New Oversight**
- **MDA Has Greater Oversight**
 - **SEC, USD(AT&L), And OSD Review MDA Progress Monthly, Quarterly And Annually**
- **MDA Continuously Engages Warfighters To Understand Capability, Develop CONOPs, Shape Development Efforts**
- **MDA Did Not Abandon Requirements**
 - **Changed The Process And Timing To Define Requirements**